

DEPARTMENT OF TRANSPORTATION**DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-003342**Date Inspected:** 20-Jul-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1530**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** See below**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** OBG/Tower**Summary of Items Observed:**

Caltrans Quality Assurance (QA) Inspector Sherri Brannon arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China to periodically monitor welding and Quality Control (QC) functions. While on site the QA Inspector observed and/or discovered the following.

OBG Sub Assembly Bay 3

QA Inspector Brannon observed ZPMC continuing with the fabrication of various Side, Bottom and Edge Panels designated for the SAS OBG. The general fabrication of said items consist of removing of coating from weld joint areas, cutting stiffener plates, beveling various, splicing of plates, fitting, tack welding and welding.

Bay 3-OBG side/bottom/edge panels:

QA Inspector Brannon randomly observed ZPMC qualified welder's, tack welding various T stiffeners plates utilizing a shielded metal arc welding (SMAW) process with a 4.0mm diameter electrode, filler metal brand E7018, class TL508 non-FCM and filler metal brand E7018, class THJ506Fe-1 for FCM material. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-P-2112 and WPS-B-P-2112-FCM respectively.

Bay 3-OBG side/bottom panel (Gantry 1 and Gantry 2):

QA Inspector Brannon randomly observed ZPMC qualified welders fillet welding joining T-stiffeners to side panel plate for SP648-001 weld joints 001~010 and SP643-001- weld joints 001~010 respectively. Qualified welders was observed welding in the 2F (horizontal) position utilizing flux cored arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand Supercored 71H, class E71T-1. QA Inspector Brannon

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observed the ZPMC QC CWI Inspector Huang Wen Pang verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2132-3.

OBG/Tower Sub Assembly Bay 4

Bay 4 – Heat straightening:

QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening on various side/bottom panels. Side/bottom panels cause for heat straightening welding distortion. Heat Straightening is performed by flame straightening using oxygen acetylene or natural gas using a hand torch.

Bay 4 Tower Diaphragm Flange Sub-assemblies:

QA Inspector Brannon randomly observed ZPMC welder's welding fill pass at weld joint # NSD1 SA261 9A. Qualified welder was observed welding in the 3G (vertical) position utilizing flux cored arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand Supercored 71H, class E71T-1. QA Inspector Brannon observed the ZPMC QC CWI Inspector Mr. Zhao Chen Sun verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2233-B-U3-F.

Bay 4 Tower Diaphragm Flange Sub-Assembly to Tower Diaphragm:

QA Inspector Brannon randomly observed ZPMC welder fillet welding joining ESD1 SA234 to SA346 weld joint #2. Welder was observed welding in the 2F (horizontal) position utilizing flux cored arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand E71T-12JH4, class K-71TSR. QA Inspector Brannon observed the ZPMC QC CWI Inspector Mr. Zhao Chen Sun verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-4132.

OBG/Tower Sub-Assembly

Bay 7-OBG floor beam panels:

QA Inspector Brannon randomly observed ZPMC qualified welder's, tack welding various floor beam web splice connections and floor beam top and bottom diaphragm flange to web utilizing a shielded metal arc welding (SMAW) process with a 4.0mm diameter electrode, filler metal brand E7018, class TL508 or brand E7018, class ThJ506Fe1. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-P-2112 or WPS-B-P-2112-FCM.

Bay 7-OBG - Floor Beam Sub Assembly:

QA Inspector Brannon randomly observed ZPMC qualified welder's fillet welding various floor beam stiffeners plates to floor beam web plates, FB020-001-074. Qualified welders was observed welding in the 2F (horizontal) position utilizing a flux corded arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Hu Wei Qing verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2132-3.

Bay 7- OBG Diaphragm Diagonal Brace-Sub Assembly

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QA Inspector Brannon randomly observed ZPMC qualified welder's fillet welding closure plates to various floor beam diaphragm diagonal brace FB006-060 weld joint #1 & 2 and FB006-059 weld joint #003 & 004. Qualified welder's was observed welding in the 2F (horizontal) and 3F (vertical) positions utilizing a shielded metal arc welding (SMAW) process with a 3.2mm diameter electrode, filler metal brand E7018, class TL-508. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Hu Wei Qing verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-P-2112, 2F (horizontal) and WPS B-P-2113, 3F (vertical).

OBG/Tower Sub-Assembly

Bay 8 OBG Floor Beam Sub Assemblies

QA Inspector Brannon randomly observed ZPMC qualified welder splice welding fill/cover passes for various floor beam web splice. Qualified welder was observed welding in the 1G (flat) position utilizing a submerged arc welding (SAW) process with a 4.8mm diameter electrode, filler metal brand EM12K, class JW3, machine. QA Inspector Brannon observed the ZPMC QC CWI Inspector Mr. Hu Wei Qing verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2221-B-L2c-S-1.

Bay 8 Tower Diaphragm Flange Sub Assemblies:

QA Inspector Brannon randomly observed ZPMC welder welding fill pass's at weld joint # ESD1-SA371- 6A and WSD1-SA372-9B. Welder was observed welding in the 3G (vertical) position utilizing flux cored arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand Supercored 71H, class E71T-1. QA Inspector Brannon observed the ZPMC QC CWI Inspector Mr. Sha Zhi verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2233-B-U3-F.

ZPMC NDT (MT): Bay 8

QA Inspector Brannon observed accepted by ZPMC marking for magnetic particle testing (MT) on tower diaphragm SSD1-SA226-10B and WSD1-SA270.

ZPMC NDT (UT): Bay 8

QA Inspector Brannon observed accepted by ZPMC marking for ultrasonic testing (UT) on floor beam web plates FB075-001-032, FB081-001-032, FB089-001-032, FB016-016-026, FB016-015-026, FB073-001-032, FB083-001-032, FB077-002-032 and FB077-001-032.

ZPMC NDT (UT): Bay 8

QA Inspector Brannon observed accepted by ZPMC marking for ultrasonic testing (UT) on tower diaphragm plates WSD1-SA226-10B and SSD1-SA270-1B/2B.

Summary of Conversations:

No relevant conversations to report.

Comments

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This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Ady Velasco 13816942685, who represents the Office of Structural Materials for your project.

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| Inspected By: | Brannon, Sherri | Quality Assurance Inspector |
| Reviewed By: | Lanz, Joe | QA Reviewer |
